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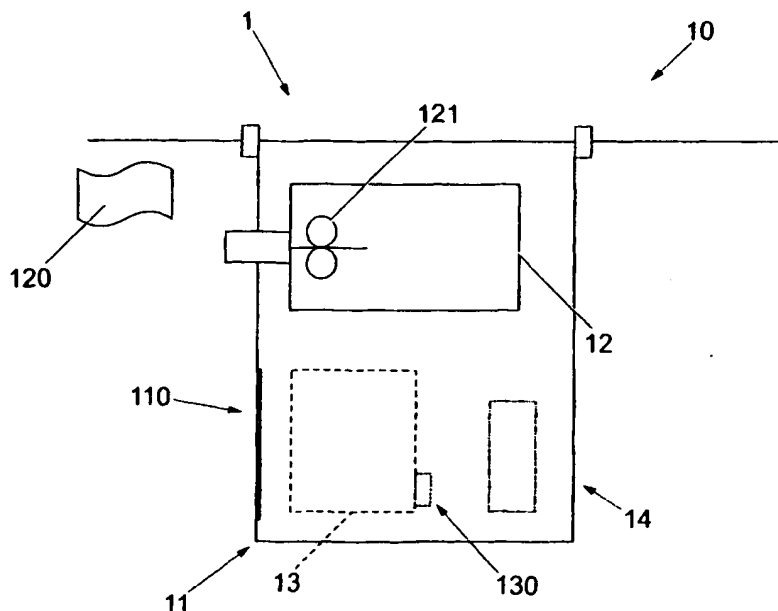
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(54) Title: BANKNOTE HANDLING SYSTEM



(57) Abstract: A banknote handling unit (10) located at a point of sale accepts banknotes via a verifier and stacker (12), which stacks the notes in a cassette (13). The cassette (13) has a non-volatile memory element (130) which stores details of the number and value of notes within the cassette at any time. The cassette (13) is removable, and can only be opened and unloaded at a secure location, where the contents are checked against the record in the memory (130).

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

1     "Banknote Handling System"

2

3     This invention relates to a banknote handling  
4     system. More specifically, the invention relates to  
5     a system which allows verification and secure  
6     handling of banknotes in retail and similar  
7     environments.

8

9     Retailers require to accept a variety of  
10    denominations of banknote at high speed. They  
11    ideally want to eliminate suspect notes immediately  
12    and store high denominations securely in an  
13    undercounter "vault" rather than in the cash  
14    register.

15

16    Conventional solutions involve UV forgery detection  
17    of forgery checking pen plus operator judgement then  
18    placement of note into "vault" hopper and operator  
19    activation of lever to stack note into vault.

20

21    It is an object of the present invention to provide  
22    a banknote handling system which obviates or

1 mitigates the disadvantages of previously proposed  
2 systems.

3

4 According to the present invention there is provided  
5 a banknote handling system comprising: banknote  
6 verifying means adapted to input banknotes and  
7 verify the integrity of a banknote; means to pass  
8 the checked banknote to a secure cassette: and means  
9 associated with the cassette to record the value and  
10 status of the notes checked by the verifying means.

11

12 Preferably, the record means is integral with the  
13 cassette.

14

15 Preferably, the verifying means also effects  
16 stacking of the banknotes.

17

18 Preferably, the secure cassette, together with the  
19 record means are removable for subsequent emptying  
20 and resetting.

21

22 The system also includes means for interrogating the  
23 record means.

24

25 Preferably, the handling system is located at a  
26 point of sale.

27

28 Preferably, the removable cassette can only be  
29 opened at a remote secure site.

30

31 The invention also provides a cassette for use in  
32 the foregoing system, the cassette comprising a

1 secure housing formed to receive banknotes one at a  
2 time and sealable against unloading, the cassette  
3 also comprising non-volatile memory means for  
4 receiving and storing data defining the number and  
5 value of banknotes inserted into the cassette.

6

7 A further aspect of the invention resides in a  
8 method of handling banknotes comprising: receiving  
9 banknotes at a point of sale, passing the banknotes  
10 one at a time through banknote verifying means into  
11 a cassette at the point of sale, storing data  
12 relating to the value and number of banknotes in a  
13 memory integral with or attached to the cassette,  
14 transporting the cassette to a secure site, and  
15 opening the cassette at the secure site.

16

17 Embodiments of the present invention will now be  
18 described, with reference to the accompanying  
19 drawings, in which:-

20

21 Fig. 1 illustrates schematically a banknote  
22 handling system made in accordance with the  
23 present invention, illustrating a point of sale  
24 installation.

25

26 Fig. 2 illustrates the system in use at a  
27 secure, remote, emptying site; and

28

29 Fig. 3 is a block diagram illustrating a signal  
30 processing means for the record means mounted  
31 on the cassette.

32

1 Referring to the drawings, a banknote handling  
2 system comprising a unit 10 mountable at a point of  
3 sale designated generally at 1. The unit 10  
4 comprises a housing 11 which carries a banknote  
5 verifying unit 12, a removable secure cassette 13  
6 and a data processing unit 14.

7  
8 The bank note verifying unit 12 is adapted to  
9 receive banknotes 120 and includes motorised means  
10 121 for handling the banknote 120, verifying its  
11 status and effecting stacking of the banknote.

12  
13 Banknote verifying units of this type are known  
14 per se being used, for example, in vending machines  
15 and accordingly will not be further described  
16 herein.

17  
18 The verifying unit 12 passes the checked, counted  
19 and stacked banknotes to a secure removable cassette  
20 13 mounted in the housing 11 behind a lockable door  
21 110. The removable cassette is equipped with record  
22 means in the form of a non-volatile memory device  
23 130 which receives from the verifying unit 12 the  
24 number and value of the notes stacked in the  
25 cassette, and maintains a running total. As the  
26 memory device 130 is mounted on the cassette, the  
27 information relating to the value of the notes  
28 travels with the cassette and can thus be externally  
29 read, thus avoiding the need to open the cassette at  
30 any stage prior to the final secure counting  
31 station.

32

1 The non-volatile memory device 130 is provided with  
2 a unique serial number which identifies the location  
3 of the cassette. The unit is provided with a data  
4 processing system 14 which allows information to be  
5 made available at a point of sale.

6  
7 Accordingly, as banknotes are fed into the cassette  
8 13 after being processed by the verifying unit 12,  
9 the appropriate information is stored in the non-  
10 volatile memory device 130 which thus carries  
11 complete data of the number and value of the notes  
12 in the cassette 13.

13  
14 Referring now to Fig. 2, there is illustrated a  
15 system for interrogating the cassette in, for  
16 example, a cash office after the cassette has been  
17 removed from the point of sale unit. The sealed  
18 cassette, removed from the point of sale unit, is  
19 passed to a reader/writer unit 20 which interrogates  
20 the memory device 130 for further processing.

21  
22 Alternatively, the cassette data may have already  
23 been interrogated where the vault reader/writer  
24 electronics is fitted with the optional  
25 communications interface.

26  
27 The unopened cassette 13 can be deposited in a safe  
28 for uplifting by the bank or security company. The  
29 unique identifier number of each cassette identifies  
30 the retailer, branch number and cash register number  
31 from which the cassette came, without the need for  
32 accompanying paperwork.

1     Once the cassette 13 is opened (usually by the bank  
2     or security company) and the banknotes removed, the  
3     memory device 130 may be "cleared" by use of the  
4     reader "wand" or by means of a command sent on the  
5     vault communications port once the cassette 13 is  
6     re-inserted in the vault.

7

8     The banknote handling system of the present  
9     invention has significant advantages to the  
10    retailer.

11

- 12    - automating the verification and stacking of
- 13    banknotes at Point of Sale (POS)
- 14    - counting the notes automatically at POS
- 15    - allowing a locked or sealed, secure, identifiable
- 16    and reusable cassette to be taken direct from POS to
- 17    bank
- 18    - tracking of a cassette to an individual retailer,
- 19    branch, register and operator is possible by virtue
- 20    of unique serial number carried in every non-
- 21    volatile memory device
- 22    - vaults may be interfaced to the retailers POS
- 23    system to provide continuous, on-line data.

24

25    Optionally, the vault may be fitted with a  
26    communications port to allow direct connection to  
27    the retailers' central systems, to a network or to a  
28    hand held device thus allowing access to the  
29    cassette memory data without removal of the cassette  
30    from the vault.

31



1 Modifications and improvements may be incorporated  
2 without departing from the scope of the invention,  
3 for example:

4

5 a) The interface between the vault reader/writer  
6 electronics and the memory device attached to the  
7 cassette may involve physical contacts, a wireless  
8 or inductive contactless system, an optical link or  
9 any other suitable interface.

10

11 b) The external communications interface of the  
12 reader/writer electronics may be a conventional  
13 serial or parallel interface, a network port (such  
14 as RS485 or Ethernet) or an optical link (such as  
15 IrDA).

16

17 c) The reader wand may be a "cradle" into which  
18 the cassette is placed, a hand-held device, or any  
19 suitable apparatus.

20

21 d) The reader wand may be fitted with a printer to  
22 allow the cassette data to be printed as, for  
23 example, a receipt or audit trail.

1     CLAIMS

2

3     1. A banknote handling system comprising: banknote  
4     verifying means adapted to input banknotes and  
5     verify the integrity of a banknote; means to pass  
6     the checked banknote to a secure cassette: and means  
7     associated with the cassette to record the value and  
8     status of the notes checked by the verifying means.

9

10    2. A banknote handling system according to claim 1,  
11    in which the record means is integral with the  
12    cassette.

13

14    3. A banknote handling system according to claim 1  
15    or claim 2, in which the verifying means also  
16    effects stacking of the banknotes.

17

18    4. A banknote handling system according to any  
19    preceding claim, in which the secure cassette  
20    together with the record means are removable for  
21    subsequent emptying and resetting.

22

23    5. A banknote handling system according to any  
24    preceding claim, further including means for  
25    interrogating the record means.

26

27    6. A banknote handling system according to any  
28    preceding claim which is adapted to be located at a  
29    point of sale.

30

1     7. A banknote handling system according to claim 6,  
2     in which the removable cassette can only be opened  
3     at a remote secure site.

4  
5     8. A cassette for use in the system of any  
6     preceding claim, the cassette comprising a secure  
7     housing formed to receive banknotes one at a time  
8     and sealable against unloading, the cassette also  
9     comprising non-volatile memory means for receiving  
10    and storing data defining the number and value of  
11    banknotes inserted into the cassette.

12  
13    9. A method of handling banknotes comprising:  
14    receiving banknotes at a point of sale, passing the  
15    banknotes one at a time through banknote verifying  
16    means into a cassette at the point of sale, storing  
17    data relating to the value and number of banknotes  
18    in a memory integral with or attached to the  
19    cassette, transporting the cassette to a secure  
20    site, and opening the cassette at the secure site.

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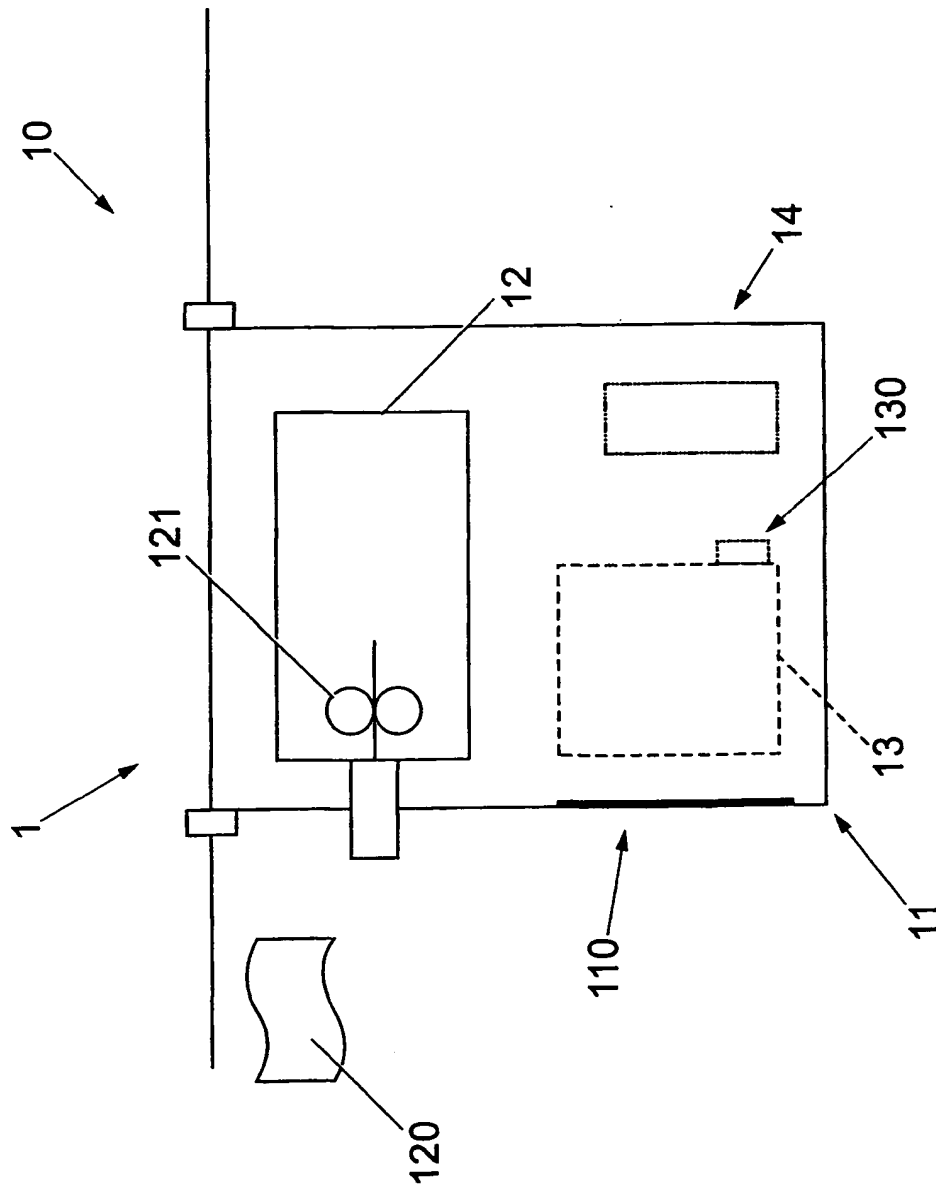


Fig. 1

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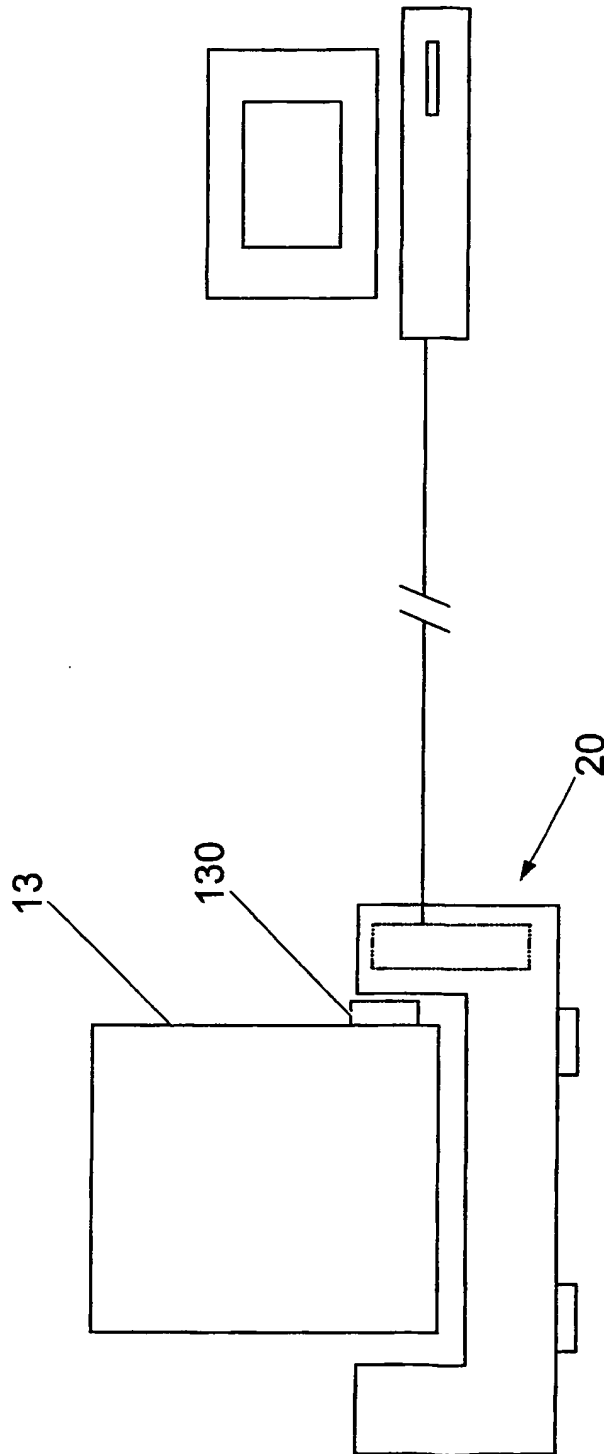


Fig. 2

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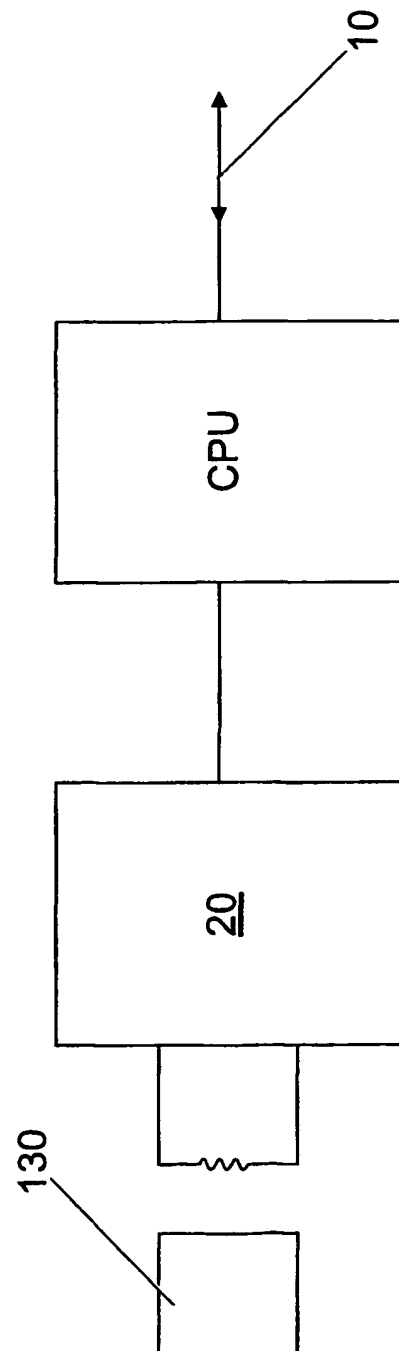


Fig. 3

## INTERNATIONAL SEARCH REPORT

International Application No

PC1/GB 01/02238

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 607D11/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 607D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	US 5 730 271 A (SCHWARTZ VLADIMIR A ET AL) 24 March 1998 (1998-03-24) the whole document ---	1-9
X	US 5 975 274 A (NOVAK FRANK A ET AL) 2 November 1999 (1999-11-02) column 3, line 8 -column 4, line 45 figures 1-5 ---	1-9
X	GB 2 246 656 A (TIMETILL SECURITY LTD) 5 February 1992 (1992-02-05) abstract page 15, paragraph 2 -page 20, paragraph 1 -----	1-9

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Patent family members are listed in annex.

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Name and mailing address of the ISA

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 01/02238

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